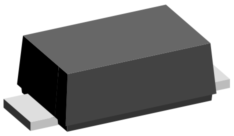
Surface Mount ESD Protection Diodes

Features

- For surface mounted applications
- Low-profile package
- Optimized for LAN protection applications
- Ideal for ESD protection of data lines in accordance with IEC 61000-4-2 (IEC801-2)
- Ideal for EFT protection of data lines in accordance with IEC 61000-4-4 (IEC801-4)
- IEC 61000-4-2 (ESD) 15 kV (air) 8 kV (contact)
- Low incremental surge resistance, excellent clamping capability
- 200 W peak pulse power capability with a 10/1000 µs waveform, repetition rate (duty cycle): 0.01 %
- Very fast response time
- High temperature soldering guaranteed: 260 °C/ 10 seconds at terminals
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



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Mechanical Data

Case: JEDEC DO-219AB (SMF®) Plastic case

Terminals: Solder plated, solderable per MIL-STD-750, Method 2026

Polarity: The band denotes the cathode, which is positive with respect to the anode under normal TVS operation

Mounting Position: Any

Weight: approx. 15 mg

Packaging Codes/Options:

GS18 / 10 k per 13 " reel (8 mm tape), 50 k/box

GS08 / 3 k per 7 " reel (8 mm tape), 30 k/box

Absolute Maximum Ratings

Ratings at 25 °C, ambient temperature unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Peak pulse power dissipation	10/1000 µs waveform[1)]	P_{PPM}	200	W
	8/20 µs waveform[1)]	P_{PPM}	1000	W
Peak pulse current	10/1000 µs waveform[1)]	I_{PPM}	next Table	A
Peak forward surge current	8.3 ms single half sine-wave	I_{FSM}	20	A

[1)] Non-repetitive current pulse and derated above T_A = 25 °C

Thermal Characteristics

Ratings at 25 °C, ambient temperature unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance[2)]		R_{thJA}	180	K/W
Operation junction and storage temperature range		T_{stg}, T_J	- 55 to + 150	°C

2) Mounted on epoxy glass PCB with 3 x 3 mm, Cu pads (≥ 40 µm thick)

Electrical Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified. V_F = 3.5 V at I_F = 12 A (uni-directional only)

Partnumber	Marking Code UNI	Breakdown Voltage[1]	Test Current	Stand-off Voltage	Maximum Reverse Leakage	Maximum Peak Pulse Surge Current [2,3]	Maximum Clamping Voltage	Junction Capacitance
		$V_{(BR)}$	@ I_T	V_{WM}	@ V_{WM} I_D	I_{PPM}	@ I_{PPM} V_C	C_j @ V_R = 0 V, f = 1 MHz
		V	mA	V	µA	A	V	pF
		min						typ
SMF5V0A	AE	6.40	10	5.0	400	21.7	9.2	1030
SMF6V0A	AG	6.67	10	6.0	400	19.4	10.3	1010
SMF6V5A	AK	7.22	10	6.5	250	17.9	11.2	850
SMF7V0A	AM	7.78	10	7.0	100	16.7	12.0	750
SMF7V5A	AP	8.33	1.0	7.5	50	15.5	12.9	730
SMF8V0A	AR	8.89	1.0	8.0	25	14.7	13.6	670
SMF8V5A	AT	9.44	1.0	8.5	10	13.9	14.4	660
SMF9V0A	AV	10.0	1.0	9.0	5.0	13.5	15.4	620
SMF10A	AX	11.1	1.0	10	2.5	11.8	17.0	570
SMF11A	AZ	12.2	1.0	11	2.5	11.0	18.2	460
SMF12A	BE	13.3	1.0	12	2.5	10.1	19.9	440
SMF13A	BG	14.4	1.0	13	1.0	9.3	21.5	420
SMF14A	BK	15.6	1.0	14	1.0	8.6	23.2	370
SMF15A	BM	16.7	1.0	15	1.0	8.2	24.4	350
SMF16A	BP	17.8	1.0	16	1.0	7.7	26.0	340
SMF17A	BR	18.9	1.0	17	1.0	7.2	27.6	310
SMF18A	BT	20.0	1.0	18	1.0	5.8	29.2	305
SMF20A	BV	22.2	1.0	20	1.0	6.2	32.4	207
SMF22A	BX	24.4	1.0	22	1.0	5.6	35.5	265
SMF24A	BZ	26.7	1.0	24	1.0	5.1	38.9	240
SMF26A	CE	28.9	1.0	26	1.0	4.8	42.1	225
SMF28A	CG	31.1	1.0	28	1.0	4.4	45.4	210
SMF30A	CK	33.3	1.0	30	1.0	4.1	48.4	205
SMF33A	CM	36.7	1.0	33	1.0	3.8	53.3	190
SMF36A	CP	40.0	1.0	36	1.0	3.4	58.1	180
SMF40A	CR	44.4	1.0	40	1.0	3.1	64.5	165
SMF43A	CT	47.8	1.0	43	1.0	2.9	69.4	160
SMF45A	CV	50.0	1.0	45	1.0	2.8	72.7	155
SMF48A	CX	53.3	1.0	48	1.0	2.6	77.4	150
SMF51A	CZ	56.7	1.0	51	1.0	2.4	82.4	145

[1] Pulse test $t_p \leq 5.0$ ms

[2] Surge current waveform 10/1000 µs

[3] All terms and symbols are consistent with ANSI/IEEE C62.35

Typical Characteristics (Tamb = 25 °C unless otherwise specified)

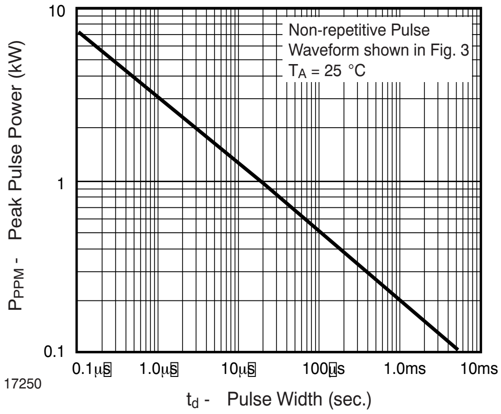


Figure 1. Peak Pulse Power Rating

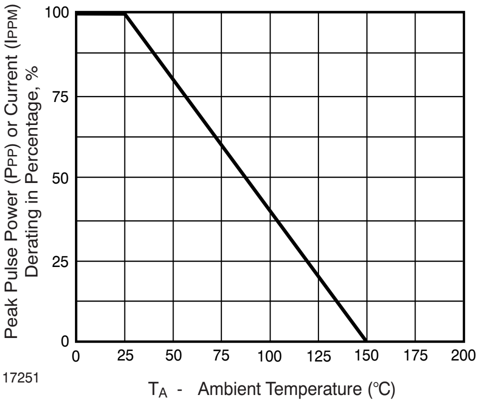


Figure 2. Pulse Derating Curve

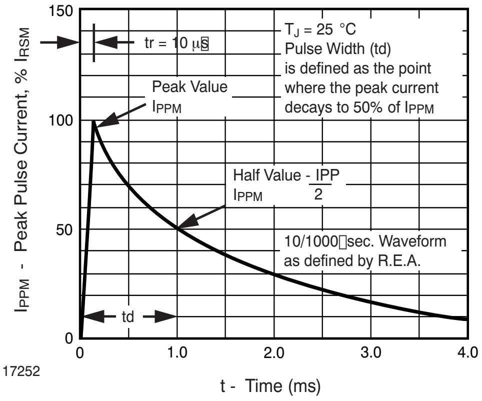
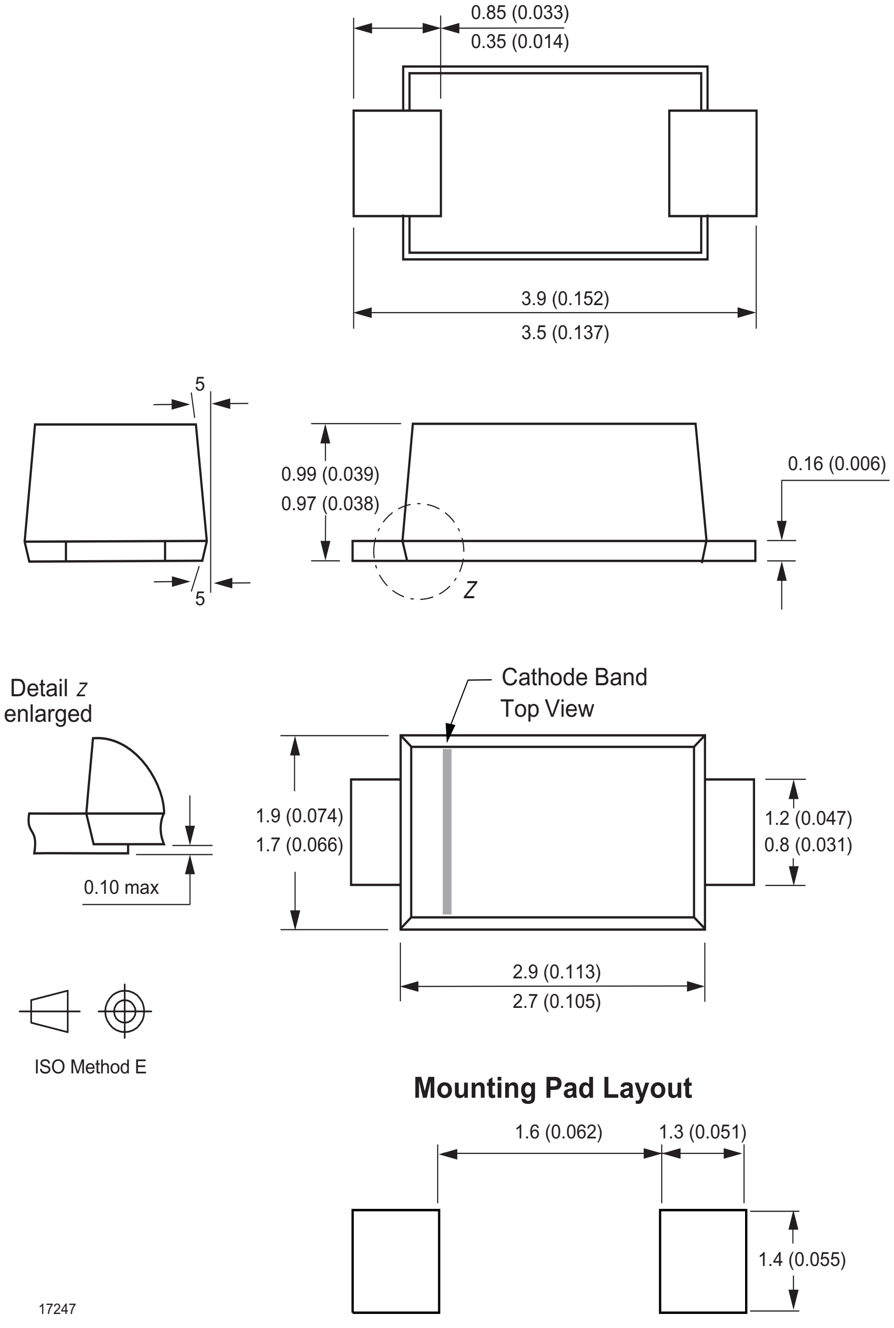
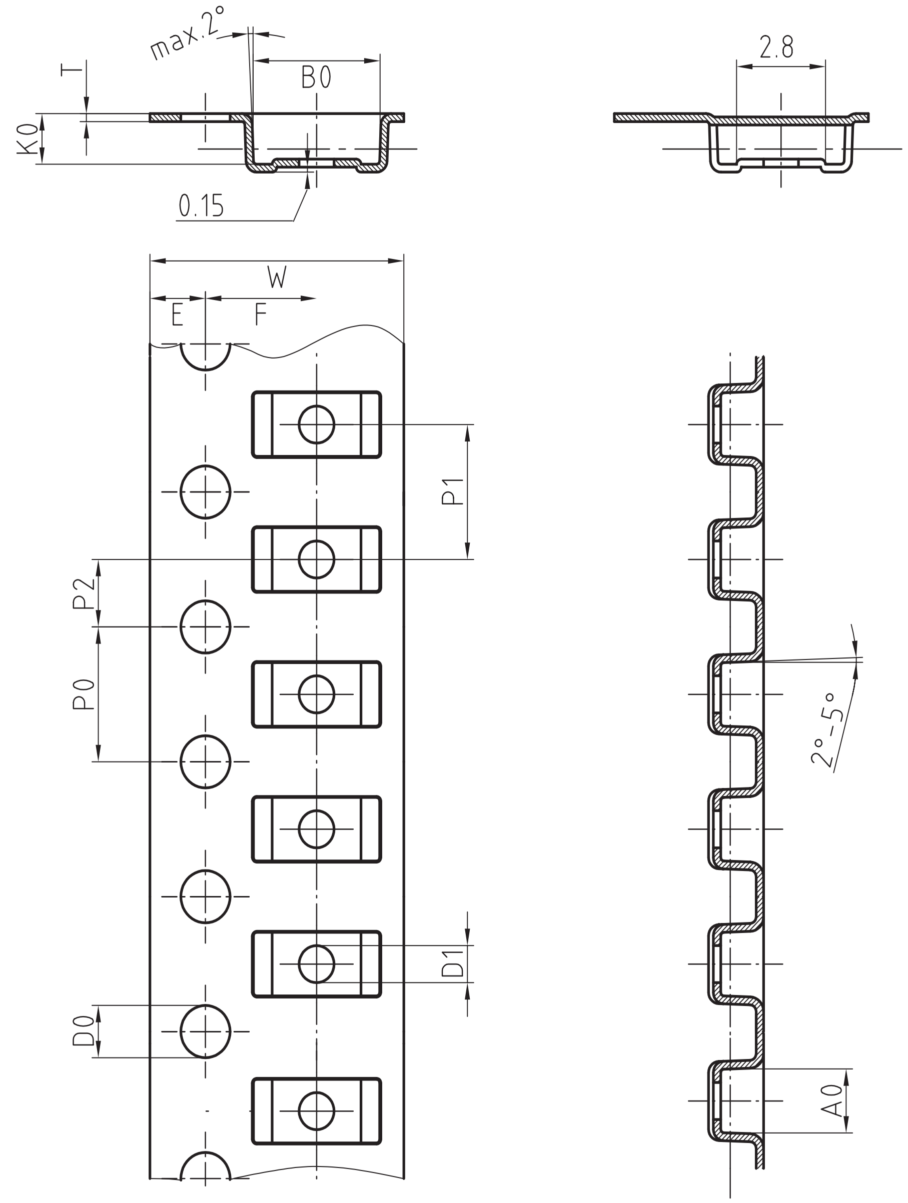


Figure 3. Pulse Waveform

Package Dimensions in mm (Inches)



Blistertape for SMF



Mat:	A0	B0	K0	W	T	P0	P2	P1	D0	D1	E	F
PS	1.9	4.0	1.5	8.0	0.235	4.0	2.0	4.0	1.5	1	1.75	3.5

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Ozone Depleting Substances Policy Statement

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

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